

# **SKILLS FOR A GREEN RECOVERY**

**A CALL TO ACTION FOR THE  
UK CONSTRUCTION SECTOR**

**Oscar Watkins and  
Dean Hochlaf**

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# SUMMARY

The UK's 10-point plan to achieve net zero climate emissions by 2050 is a shared responsibility. Central to the plan is the construction industry, which will be responsible for designing, building and maintaining the infrastructure that will play a pivotal role in decarbonising our built environment. From retrofitting homes to improve energy efficiency to building world-beating major infrastructure projects that stem the tide of carbon emissions; everything starts and ends with the people and firms that will build, maintain and operate our net zero infrastructure. The civil engineering sector is at the heart of these efforts, creating the major infrastructure assets that make our towns and cities cleaner and greener.

However, the entire construction industry is facing large and persistent skills gaps and skills shortages, that may hamper its ability to make good on the government's ambitions. Our analysis shows that up to 750,000 construction workers could retire or be on the verge of retiring over the next 15 years. Not enough is being done to replace these workers, with just 20.3 per cent of construction workers aged under 30. IPPR has looked in detail at the Thames Tideway Tunnel major infrastructure project, shedding light on what is needed for the construction sector to recruit, train and retain a workforce for a green recovery.

The issue of skills and employment encompasses recruitment, training and retention of workers. Skills and Employment Programmes are initiatives undertaken by projects and firms, designed to attract new people to jobs and careers, upskill workers in technical skills, and promote retention. These initiatives are common in major infrastructure projects, where they are a vital part of the work that businesses do to recruit, train and retain talent. Where they exist, these programmes encompass vocational training, employee pastoral support, and inclusion in the workplace.

To assess the performance of current employment and skills programmes, we conducted qualitative research among practitioners involved in the Thames Tideway Tunnel Project, and among stakeholders from industry. Our research findings and recommendations are detailed in a technical paper and summarised in this executive summary. The contents of our report will be of interest to those working in the infrastructure sector, but have a bearing on issues faced across the construction industry.

We discover that skills and employment programmes in the infrastructure sector are hamstrung by a lack of collective action among firms, and a lack of leadership in government. These programmes are therefore failing to align industry-wide demand for construction skills with overall supply of construction workers and delivery of vocational training.

However, we also find that there is nothing new about green construction skills. The workforce is already capable, at least in terms of its knowledge and technical capability, of building the infrastructure needed to achieve net zero. Rather, the challenge we face is twofold: there is a gap between the number of skilled workers required to build the infrastructure, and those already in the workforce; and there is a need to transform the values and attitudes of all people and firms in the sector so that they are habituated in 'greening'.

Investment in a green recovery can create new construction jobs, and stimulate a revolution in the productivity of the construction sector. However, to seize this opportunity there is an urgent need for the government to bring forward

new funding, legislation and regulatory powers that set a level playing field for construction firms. Tideway's experience shows that this structural change is needed to deliver the skills we need for a green recovery.

## **THE PROBLEMS**

Our research found that there are several key issues holding back progress on construction skills.

### **A lack of collective action**

The construction sector is highly fragmented (Farmer 2016, McKinsey 2020). Our research finds that this fragmentation leaves accountability for skills and employment spread across a large number of disparate organisations and businesses. This has caused a collective action problem, where incentives designed to stimulate training and employment are poorly aligned with reality.

At a project level much more could be done to elevate the issues of skills and employment, so that they are given proper consideration by senior leaders within parent companies and clients.

Government also fails to coordinate investment in major infrastructure projects, with investment in vocational training and employment. This leads to a mismatch between skills shortages and skills gaps, and the supply of skilled workers into the construction sector.

### **Inadequate investment**

The UK suffers from an infrastructure investment gap (Jung and Murphy 2020). This investment gap also extends to the issues of skills and employment, where a further £6 billion of revenue funding is needed just to keep the further education sector alive (Hochlaf and Quilter-Pinner 2020). A failure to invest now will lead to escalating costs to the public in the future.

### **An ageing workforce**

The construction workforce is getting older. We find that more than one in three (34.6 per cent) workers in the sector are over the age of 50, implying that up to 750,000 workers would either retire or be on the verge of retiring over the next 15 years. The Farmer Review (2016) estimated that the demographic profile of the workforce could be 20 to 25 per cent lower by 2026. Our analysis shows that this trend has worsened, with the proportion of workers aged below 30 shrinking from 22.8 per cent to 20.3 per cent over the past five years. If these trends continue the sector may be faced with severe workforce shortages.

### **A bad place to work**

The construction sector has become reliant on cheap and insecure labour. Around 40 per cent of the construction work force is self-employed (ONS 2020), higher than anywhere else in Europe. While the industry can pay well, employment is insecure, and workplace inequality is a major issue. Just 13 per cent of the workforce are women, and just 3 per cent identify as BAME (FT 2020). Poor working conditions and a bad record on inclusion are obstacles to hiring talented people. Our research finds that solving this problem will require more forceful regulation of employment practices, and new legislation. Importantly, we find that industry itself would welcome these changes.

### **A lack of leadership**

Our research finds that there is a lack of leadership on the issues of skills and employment, at all levels of government, and industry. This underpins every problem identified by our research.

Government must take the skills crisis seriously, investing in further education, and matching its net-zero ambitions with investment in decarbonisation. Industry must give the issues of skills and employment a seat at the table in board-level decision making, and make radical changes to ensure the construction sector is an attractive place to work. If leaders in industry fail to take this action, boards will have to explain the rising cost of skills shortages to investors and shareholders in the future.

## THE SOLUTIONS

To ensure the UK's construction workforce is sufficiently skilled for a green recovery, bold action must be taken by government and industry. Below we outline the actions that government must take to generate a revolution in vocational training, and to embed net-zero in the culture of the construction sector. We also outline steps that the Construction Leadership Council (CLC), the industry's leading representative body, can take to match government action with an industry response.

### Government

**Legislate to allow industry to procure responsibly, supporting a level playing field for the construction supply chain in publicly-sponsored projects.** Our research has found that the construction sector is not an attractive place to work. The causes of this are deep-rooted, structural, and cultural. We have made clear that addressing these issues is a vital part of securing the government's ambitions to achieve net zero by 2050. The best way for government to make a start on achieving change, is for public sector sponsors of major infrastructure projects to leverage their buying power through the procurement process to drive behaviours at the firm level. We therefore recommend that the government, in partnership with industry, legislate for responsible procurement in publicly-sponsored major infrastructure projects.

The new legislation should require major projects clients to:

- appoint chief sustainability officers to senior leadership teams in major infrastructure projects, with a remit spanning skills and employment and carbon reduction
- ensure that all new major projects are net zero by design from construction, and operation, through to decommission
- pay the real living wage to all employees working on a project
- appoint boards that are representative of the population in which the project is being built
- ensure that all staff employed on major infrastructure projects are offered the opportunity to attain an accredited net-zero construction qualification
- offer incentives to the supply chain to recruit, train and retain apprentices during and after their involvement in the project.

**Produce sector-specific guidance on skills and employment interventions, to accompany the Cabinet Office Construction Playbook.** The Cabinet Office's recently published Construction Playbook provides a powerful toolkit for departmental sponsors to deliver net-zero outcomes on a project-by-project basis. The playbook also mentions skills and employment and 'social value' as desired outcomes for public sector procurement. There is, however, far too little detail on how exactly civil servants should appraise, evaluate and negotiate skills and employment when tendering. The issue of skills is mentioned just nine times in the circa 80-page document. Separate specific guidance should be produced on skills and employment in procurement, in close consultation with skills and employment practitioners.

**Reform the Treasury's Green Book methodology for appraisal and evaluation of new infrastructure projects, to provide specific guidance on how to account for investment in skills and employment in line with national priorities.** To further

support the transition to Net Zero, efforts must be made to improve the business case process for major infrastructure projects, so that measures to promote skills and employment better respond to real-world challenges. We recommend that guidance on appraising government projects found in the Treasury's Green Book is amended, in close consultation with industry via the Construction Leadership Council. Changes should be made to allow for consideration of vocational training and employment and employability interventions required to support a sustainable net-zero economy.

**Request that the economic regulators allow utility companies to account for the issues of skills and employment in their business plans.** This would allow the energy and water companies to cost their investments in training and employment in their business plans.

**Government should establish a commission on bogus self-employment in the construction sector, alongside unions and industry bodies.** The construction sector is overly reliant on self-employed workers. We recommend that parliament should establish a cross-party commission to investigate options for tackling bogus self-employment in the construction sector. The commission should work alongside unions and industry bodies, to ensure that the views of workers and businesses are represented.

**Commission the DfE to lead the production of a new National Infrastructure and Construction Skills Demand Pipeline.** This pipeline would complement the existing National Infrastructure Pipeline, giving clarity to industry and the further education sector on where investment in employment and skills is required. The pipeline should be produced in close consultation with The Treasury, BEIS, DfT, DEFRA and the CITB.

**The government, via the Department for Work and Pensions, should make explicit in health and safety regulations the relationship between pay and terms of employment, and health and safety in the construction sector.** Making this relationship explicit in health and safety guidance would promote interventions at the firm level, where low pay and poor employment conditions are putting people at risk of injury or death.

**Increase funding for further education and expand apprenticeship opportunities.** So that the construction sector can benefit from a strong skills pipeline, we recommend the following to replace lost funding and to support expanded life-long access to vocational training.

- The Treasury should work with representatives from construction and other sectors to establish a Green Apprenticeship Fund for small and medium-sized enterprises. The scheme would aim to offer a 50 per cent annual wage subsidy for SMEs offering apprenticeships that specifically bolster green skills. We estimate that such a fund would cost £370 million.
- Government should investigate options for further increasing capital funding to the FE sector, with the aim of promoting state-of-the-art training facilities for green skills.
- Government should commit to increasing FE and adult education revenue-funding by £6 billion per year, by the end of the Parliament.
- Government should provide a £4,000 'opportunity grant' to those who have lost their job during Covid-19, who do not have a level 3 qualification, so that they can pursue a Level 3 college course. We estimate that up to 250,000 people would potentially access this, at a cost of £1 billion (Hochlaf and Quilter-Pinner 2020).

## NEXT STEPS

**The CLC should take forward the findings of this research, to create an operational strategy for the sector, with the aim of securing endorsement from government.**

We have set out bold actions for the government. To ensure that these actions are taken forward, Industry needs to show that it is committed to making equally ambitious efforts to close the green skills gap.

The Farmer Review (2016) made clear the link between the procurement process in major construction projects, and skills and employment outcomes. In our qualitative research, we find that Tideway was successful in empowering skills and employment practitioners, and in connecting commercial decision making with skills and employment objectives. However, it was also clear that opportunities are easily missed, and greater integration of labour suppliers in this process is required alongside a concerted shift towards direct employment.

We therefore suggest that the CLC should take forward the findings of this research, producing an operational strategy for the sector, and convening the development of training for industry leaders. This strategy must encompass:

- a plan for the construction sector's response to the climate crisis, and the government's net zero by 2050 target, and their transition target of 2030
- a comprehensive assessment of the short and long-term 'green skills' needs of the construction sector
- a detailed proposal for a sector skills and employment deal, setting out the funding required from government to facilitate a revolution in vocational training in the sector, that rises to the challenge of the green skills gap
- detailed guidance for all construction businesses on how to drive effective skills and employment outcomes through the supply chain via procurement
- a framework for corporate governance of carbon reduction and skills and employment, including guidance on key appointments (such as Chief Sustainability Officers) and board-level accountability for these issues
- a standardised framework for monitoring and measuring skills and employment outcomes in major infrastructure projects and major programmes
- detailed guidance for tier 1 contractors, on how to drive effective skills and employment programmes through the supply chain via procurement
- a vision for what net zero cultures and behaviours are required in the construction industry, and a roadmap for how the industry can work towards embedding these
- a vision for what 'good work' in the construction sector should look like across occupational groups, and how the entire industry can work towards this.

In addition to an industry strategy, to drive vital cultural change it is imperative that social and environmental sustainability is understood and championed by senior leaders within construction businesses. We therefore recommend that the CLC convene the professional bodies, including RICS, ICE, IMECHE, IEMA, RIBA and CECA, to develop a cross-industry net zero leadership academy, targeted at C-Suite leaders. This academy should be tasked with developing a net zero leadership apprenticeship. The academy should develop a curriculum through the apprenticeship trailblazer process, and identify suitable education providers to deliver training to leaders.

Action among a small number of the very largest businesses will not be enough to change the future of the entire construction industry. Overwhelmingly it is smaller firms that employ the bulk of the construction workforce. To begin embedding cultural change among small and medium enterprises, we recommend that the CLC convene an industry training fund, sponsored by tier 1 contractors through their apprenticeship levy, with the aim of training 1,000 SME business owners via the net zero leadership academy by 2025.

# 1. INTRODUCTION: A GREEN RECOVERY

The UK construction industry has been significantly impacted by the Covid-19 pandemic. Economic activity has been heavily suppressed in an effort to curb the spread of the virus. Output across the economy as a whole fell by over 20 per cent in April 2020 as the UK followed the lead of other European countries into 'lockdown'. Construction was among the worst affected sectors, with output contracting by over 40 per cent in the same month (ONS 2020a). The unprecedented actions have halted major projects, jeopardised employment and pushed many firms to the brink of financial collapse.

As we entered this period of uncertainty, society had already begun to search for solutions to a more persistent and perhaps grander challenge: the climate and nature crisis. We find ourselves at a historic moment. The combination of the Covid-19 crisis and the climate and nature crisis offer an opportunity to reset the direction of the UK's economy. In doing so we have a choice, to build a fairer and cleaner economy, or to further entrench carbon-intensive consumption fuelled by debt (Jung and Murphy 2020).

The government has already signalled its intention to lead the nation towards a zero-carbon future. Although these steps are welcome, it is clear that bolder action is needed.

The construction industry is 'uniquely placed' to support the economy to recover (CLC 2020). The infrastructure sector, in particular, is on the frontline of a zero-carbon economy. Action today could generate substantial rewards for the wider construction industry and the UK economy long into the future.

To meet this challenge, there is one area which must be addressed immediately. Skills gaps have long plagued construction and left the sector poorly equipped to meet the demands of the UK economy. A strong workforce is a powerful asset and one which could greatly enhance the capacity of the sector to deliver on expectations and to take on a more strategic role in advancing a more sustainable, prosperous and fairer national economy (Dromey et al 2017).

Prior to the Covid-19 pandemic the construction sector was struggling to fill skills shortage vacancies and failing to fill skills gaps through vocational training<sup>1</sup>. This green skills gap is a threat to our nation's drive to net zero. The present moment opens a window for structural transformation of construction skills. As we show in the following chapters, our research finds that to solve the construction skills gap action is needed to address the industry's fragmentation, and its failure to act collectively.

This paper takes as its starting point the experience of the Thames Tideway Tunnel major infrastructure project. Our research looks specifically at Tideway's skills and employment programme, with the aim of shining a light on the skills crisis facing the UK construction industry.

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<sup>1</sup> Skills shortage vacancies are roles for which there is a lack of skilled or qualified people to undertake a job. Skills gaps are problems with skills or competencies that occur within a business.

The issue of skills and employment encompasses recruitment, training and retention of workers. Skills and Employment Programmes are initiatives undertaken by projects and firms, designed to attract new people to jobs and careers, upskill workers in technical skills, and promote retention. These initiatives are common in the infrastructure sector, but less common in other parts of the construction industry. Where they exist, these programmes encompass vocational training, employee pastoral support, and inclusion in the workplace. The design and outcomes of skills and employment programmes are driven by public and private investment, legislation, firm-level decision making, prevailing workplace and industry cultures and macro-economic conditions.

Our research finds that skills and employment programmes in the construction sector are myopic, only addressing the time-bound requirements of a single project. These interventions are therefore failing to align industry-wide demand for construction skills with overall supply of construction workers and delivery of vocational training. This has led to a growing shortage of skilled construction workers, and persistent gaps in construction skills.

Importantly, we show that the barriers to building a skilled workforce in the construction industry are intersectional. In other words, they encompass a range of cultural, social and structural issues, that must all be addressed. These issues are increasingly gaining focus, under the banner of 'social value'. To shed some practical insight, we look in particular at the issues of poor working conditions, and the sector's struggle to attract a more diverse workforce. We argue that the move towards a net zero economy opens opportunities for firms to consider their role in creating a more just and inclusive society, by taking practical steps to reduce economic inequality, and by changing cultures in the workplace.

The Tideway Tunnel is currently one of Europe's largest major infrastructure projects, and is designed to clean up the river Thames. It is an example of green infrastructure that is instructive for the present moment. For policy makers, it highlights the tensions plaguing the UK construction sector, which are hampering the long-term potential and productivity of this vital industry. For practitioners working in future major infrastructure projects, Tideway offers a useful playbook for structuring the finer details of skills and employment programmes. For government, Tideway exposes the significant risks posed by the construction skills crisis, and how these will play out as the government works towards a zero-carbon future for the UK.

## RECOVERY AND BEYOND

The scope for transformation within the construction sector is substantial. below, we identify five areas in which the sector could make positive changes to support recovery from the Covid-19 pandemic.

**TABLE 1.1: AREAS IN WHICH THE CONSTRUCTION SECTOR CAN SUPPORT THE RECOVERY**

	Summary
<b>Supporting the economic recovery</b>	Construction is an incredibly valuable sector with the potential to drive recovery from the Covid-19 pandemic. In 2018, the sector was worth £413 billion and supported up to 3.1 million jobs covering a wide range of professional occupations. Unlike many other sectors of the UK economy, where activity is concentrated in specific geographic regions, construction is ubiquitous across the entirety of the UK economy and is well placed to support a regionally balanced recovery (CLC 2020).
<b>Achieving net zero carbon emissions</b>	While statutory targets for reducing carbon emissions have been longstanding in the UK, the decision in 2019 to commit to a net zero economy by 2050 has intensified the need to transform the UK economy. Infrastructure is the basis for the transition to net zero, delivering the means by which individuals and businesses can reduce their carbon footprint. Delivering on the government's ambitions will require investment in new technologies, alongside ambitious plans to build new and better infrastructure, and to improve the whole-life performance of existing assets. The risks of inaction now will mean the sector will face far greater costs in the future, attempting to minimise the disruption threatened by climate change (Hardy 2020).
<b>Transforming the performance of the construction sector</b>	It is widely acknowledged that the construction sector suffers from a collective action problem. The structure of the industry is highly fragmented, with accountability for issues like skills and employment spread across a large number of disparate businesses (Ribeirinho et al 2020). The commercial structure of the industry reflects this fragmentation; with procurement, contracts, and project management suffering from overly complex processes and a lack of integration (Farmer 2016). Our research finds that government suffers from a similar lack of coordination, with the investments of the Treasury in new projects often working at odds with interventions by the Department for Education (Hochlaf and Quilter-Pinner 2020). This collective action problem must be addressed to solve the underlying structural issues that are preventing the industry from solving the skills gap.
<b>The levelling-up agenda</b>	Addressing entrenched regional disparities is at the heart of the government's 'levelling-up' agenda. The UK is one of the most regionally unbalanced advanced economies (McCann 2018) which is fuelling inequality. In 2018, the National Infrastructure Pipeline identified over £400 billion of planned investment, with £190 billion to occur by 2020/21 (IPA 2018). The government's delayed National Infrastructure Strategy will further establish plans for infrastructure investment, with the intention of enabling prosperity across the nation (Keep and Ward 2020). This presents the construction sector with a valuable opportunity to upgrade infrastructure across the whole country.
<b>Diversity and inclusion</b>	While initiatives have been implemented in recent years to improve the diversity of the construction sector workforce, progress has been slow, and the sector remains relatively homogenous. Almost 10 years ago, the underrepresentation of women and ethnic minorities was a noted concern, while an ageing workforce was placing the sector at risk of losing valuable skills and experience (Peters 2011). With the sector today continuing to face skills gaps, it is apparent this issue has not been rectified. Construction is at serious risk of missing out on access to a modern and dynamic labour market, one which promotes productivity and provide firms with a 'competitive edge' (Green et al 2002), if it fails to attract, retain and develop new and diverse groups to pursue careers in the sector.

Source: IPPR analysis

To transform the construction sector, so that it is better able to deliver on the objectives outlined above, a long-term plan is required. This plan must be oriented around the government's net zero ambitions.

In an effort to ensure that the recommendations of this report are specific and achievable, we have limited the scope of our research to the issues of green recovery and green skills in the infrastructure sector.

## **GREEN RECOVERY AND GREEN SKILLS**

The UK construction sector will be among the most important actors in the UK's response to the climate crisis. From retrofitting homes to improve energy efficiency to building world-beating major infrastructure projects that stem the tide of carbon emissions; everything starts and ends with the people and firms that will build, maintain and operate our net zero infrastructure.

The UK government has set out a 10-point plan to deliver a 'green industrial revolution'. There is much to applaud in the government's plans, which represent an important milestone on the road to tackling the climate crisis. However, IPPR analysis has shown that prior to the government's recent announcements, the government was investing just 12 per cent of the funds required to meet net zero and to restore nature (Jung and Murphy 2020). The Committee on Climate Change, in their latest Carbon Budget report (2020) estimate that a further £50 billion of investment per annum would be required to achieve net zero.

As we show in this paper, this scale of investment has important implications for the construction sector. The industry is already facing a skills and productivity crisis, and increased investment in climate change mitigation will add fuel to this fire. But this investment is also an opportunity, for the construction sector and for the UK economy. Investment in a green recovery can create new construction jobs, and stimulate a revolution in the productivity of the construction sector. However, the example of Tideway shows that this opportunity can only be seized if the government shows leadership and brings forward new funding, legislation and regulatory powers that set a level playing field for construction firms. It is this structural change that is needed to deliver the skills we need for a green recovery.

Of course, Tideway is just one example of a construction project. As a major infrastructure project, it does not offer a comprehensive view of the challenges and opportunities that lie ahead for green skills and a green recovery. It is therefore important for us to set out the scope of this report in two areas; the major infrastructure projects sector and green skills.

### **Major infrastructure projects**

Given this paper's use of Tideway as a case study, we are limiting the scope of our research to the 'major infrastructure projects' sector (major infrastructure sector). This sector encompasses projects that are large in scale, in terms of funding, the workforce involved, and the materials used. Examples include energy generation projects like Hinkley Point C, and large transport projects like High Speed 2. The construction industry sometimes refers to this sector colloquially as 'civil engineering' or 'civils', and it is characterised by a unique supply-chain of specialist small and medium businesses. While we have chosen to limit the scope of our research, much of what we discover is of relevance to the wider construction sector. We have attempted to highlight where this is the case throughout this paper.

### **Green skills**

The European Centre for the Development of Vocational Training (CEDEFOP) defines green skills as 'the knowledge, abilities, values and attitudes needed to live in, develop and support a sustainable and resource-efficient society' (OECD

2014). In line with the scope of this report, we define green skills as the knowledge, abilities, values and attitudes that will be needed in the major infrastructure sector to achieve net zero by 2050.

Our interviews with practitioners suggest that there is nothing new about green construction skills. The workforce is already capable, at least in terms of its knowledge and technical capability, of building the infrastructure needed to achieve net zero. Rather, the challenge we face is twofold: there is a gap between the number of skilled workers required to build the infrastructure, and those already in the workforce; and there is a need to transform the values and attitudes of all people and firms in the sector be habituated in 'greening'. The former is about solving the existing construction skills crisis. The latter is about changing cultures in the sector.

***"We don't need to build up an army of carbon experts or environmentalists. Yes you need some specialists [...] but actually the key for decarbonising the industry is translating zero carbon skills into the wider workforce. Making sure that all the designers are doing the things they need to to make a project net zero, that engineers understand their bits, that commercial understand their role, that quality understand what it means for their roles. It doesn't mean they have to be super fluent in carbon, we need to make carbon reduction accessible to everyone."***

Industry stakeholder

While the construction sector has suffered during the Covid-19 pandemic, attention is turning towards the future. A path to recovery has been established by industry leaders through the Construction Leadership Council (CLC). This path offers clear opportunities for the sector to address the shortcomings which have left it struggling to diversify and meet the demands of modern Britain.

The road to recovery is separated into three distinct components; restart, reset and reinvent. During each stage, the sector must demonstrate it is not simply returning to business as usual but is integrating initiatives that will help deliver on the broad policy ambitions that will enhance the sectors role in national life. This will expand market opportunities for the sector and ensure construction is able to take on a more central, strategic position within the economy.

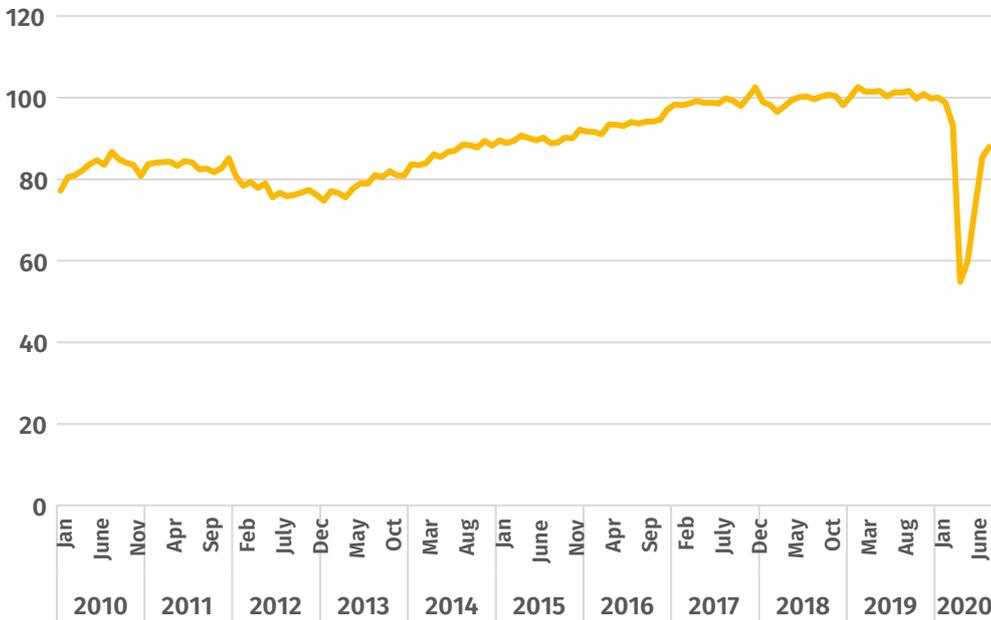
## **RESTART, RESET AND REINVENT**

### **Restart**

The immediate priority for the sector has been to help restart activity. The national lockdown led to a substantial collapse in the sector, with output 45 per cent lower in April compared to January. As restrictions have been relaxed and construction projects given permission to continue, the sector has shown signs of strength, with output in July only 13 per cent lower than in January. The rise in activity has supported an employment recovery. While over 700,000 workers in the construction sector had been furloughed during April, this had fallen to well under 300,000 by the end of July (HMRC 2020). The construction sector has so far demonstrated great resilience and an ability to rapidly rebound under more favourable conditions.

**FIGURE 1.1: CONSTRUCTION OUTPUT HAS PARTIALLY REBOUNDED FROM THE SIGNIFICANT FALL AT THE POINT OF LOCKDOWN**

Construction output index in Great Britain, (January 2020 = 100)



Source: ONS (2020)

As long as conditions remain safe for workers, it is likely that the construction sector can continue to play a role in supporting employment and sustaining economic activity.

### Reset

The promising restart will only be sustained through continued activity. A steady pipeline of work must deliver the demand and resources to drive the sector forward and compensate for the months lost to the Covid-19 pandemic. To this end, the government has committed to investing in a wide range of projects worth up to £37 billion in procurement over the next year (IPA 2020). This affords the construction sector vital funds to continue to boost output and develop supply chains.

It is promising, therefore, that the CLC has signalled its intention to use this moment as an opportunity to ‘reset’ the construction sector. In particular, the CLC has set out an intent to enhance the sector’s productivity by reviewing construction methods and investing in staff. It is also positive that the industry has committed to addressing the highly fragmented structure of the construction sector (CLC 2020). These changes will ensure the sector is in a better place to deliver a green recovery.

It is important that this ‘reset’ involves ambitious action to invest in skills and employment provision aligned with investments in decarbonising the economy. As we show in chapter 2, this can only be achieved if every part of the construction sector is able to take part, and if there is cooperation between sponsors, investors, clients and firms.

## Reinvent

Globally, leading economies are at the precipice of a revolution in green industrial technology. Nations seizing this opportunity are doubling down on investments in the technical and productive capacity of their construction and manufacturing sectors (IMF 2020). It is concerning, therefore, that the productivity of the UK's construction sector has stagnated over several decades, (CIOB 2016). New technologies require investment in upskilling the workforce, but this has been lacking, stifling innovation (CLC 2019). 'Reinventing' the construction sector will also mean fundamental changes to the pipeline of new skills into the sector.

As we show in chapter 2, such a fundamental reinvention of the construction sector will require equally ambitious changes to legislation, and the regulatory environment. Without this, many firms will fail to participate. It is also true that if these interventions are by design blunt tools, and do not account for the experience of practitioners working on employment and skills interventions, they may have unintended consequences. Our research finds that the views and experience of these people is of vital importance. Requisite funding must also be made available, so that there are appropriate resources for firms in the sector to follow the rules and guidance. Finally, legislation must be introduced which can compel firms of all sizes to act. The combination of funding and legislative instruments will be essential for guiding the sector to adopt a more proactive approach to developing the skills necessary to deliver a green future

## 2. SKILLS FOR A GREEN RECOVERY

### QUANTIFYING THE GREEN SKILLS GAP

Skills gaps have had a persistent and adverse effect on the UK economy. In 2019, the Open University Business Barometer found over two in three employers had 'struggled to find workers with the right skills'. This has led to higher costs of up to £6.3 billion for UK organisations, in the form of lost productivity and greater resources required to train and recruit staff (The Open University 2019). Without the right skills, firms will struggle to reach their potential.

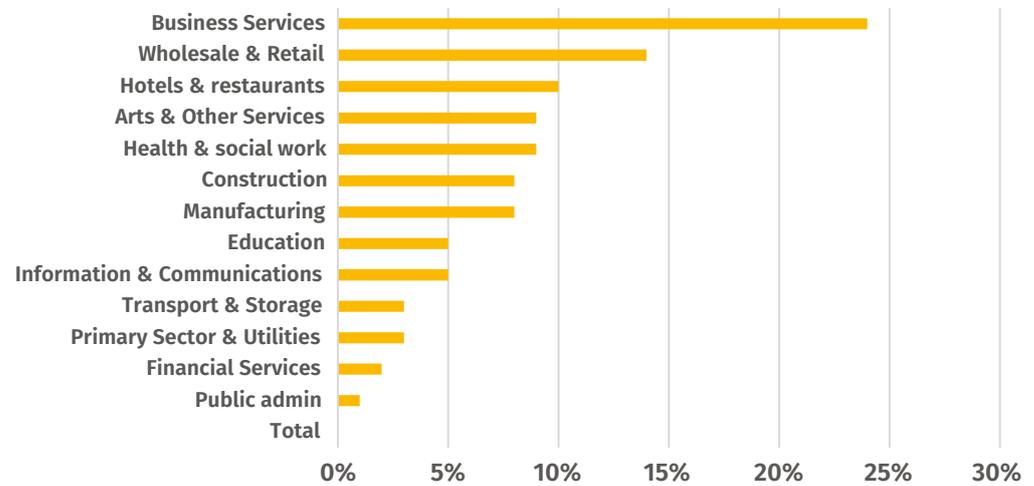
There is a substantial skills gap when it comes to delivering decarbonisation. The transition to a net zero economy will require 'specific skills sets' that must be developed. It has been estimated that 10 per cent of UK jobs will 'require reskilling' (Unsworth 2019). Given the crucial role of construction in the decarbonisation process, this will invariably impact jobs within the sector. As the economy recovers from the pandemic, it is crucial that job-creation efforts are focused on delivering net zero. This will require initiatives which are not 'rooted in the existing skills' of the construction workforce (Unsworth et al 2020), but instead develop the new skills this challenge demands.

However, the scale of the skills gap in construction is difficult to measure. To understand what skills will be required in the future, we need a firm understanding of future demand. This requires knowledge of what projects will receive funding, and what skills needs will be created by future innovations in construction methods. Without this it is not possible to know the extent to which the workforce will be able to meet demand (Forbes et al 2015). This additional layer of uncertainty contributes to the challenges facing the sector.

Intensifying the skills gap are significant construction skills shortages, that have grown over recent years. Worryingly, the sector has for decades failed to take action on this issue. The 2017 Employer Skills Survey found that the sector is decisively average when it comes to plugging skills shortages. An estimated 8 per cent of employers in the sector said that there were vacancies caused by skills shortages. This ranks construction 6th out of 13 sectors, in terms of highest numbers of skill shortage vacancies.

**FIGURE 2.1: THE CONSTRUCTION SECTOR IS AN AVERAGE PERFORMER WHEN IT COMES TO SKILL SHORTAGE VACANCIES**

Skill shortage vacancies by sector, percentage of employers



Source: Employer Skills Survey (2018)

Skills shortages are having a damaging impact on the productivity of construction. Labour shortages have contributed to ‘poor quality’ workmanship and have been linked to budgetary overspends. This can inhibit firms from innovating, and limit their potential (Farmer 2016). Without action today, the skills gap will begin to exacerbate the skills shortage.

There are also some shorter-term causes for concern. The Covid-19 pandemic has had an extremely negative impact on labour demand in the sector. According to the Build UK People’s Survey, up to 43 per cent of Build UK members anticipated that they would have to make redundancies (Build UK 2020). This reflects the short-term collapse in demand across the construction sector, in the immediate aftermath of the Covid-19 pandemic. However, anecdotal evidence suggests that the infrastructure sector may become an outlier in terms of firm-level performance, with businesses seeing an increase in orders in the autumn of 2020.

As the economy begins to recover, it is vital the sector takes this opportunity to end the structural skills gaps and skills shortages it has faced. The industry is set to expect a surge in demand during the recovery from Covid-19. Major projects such as HS2 are set to resume, and the government has set an ambitious target for housebuilding, in addition to the huge number of projects already underway which will serve ‘as the backbone of the economy’ (Build UK 2019). It is clear however, that these ambitious projects require an urgent shift in national skills policy, to create long-term solutions to the sector’s persistent skills gap.

### THE WORKFORCE TODAY

The characteristics of the construction workforce are indicative of the challenges, failures and opportunities facing the sector.

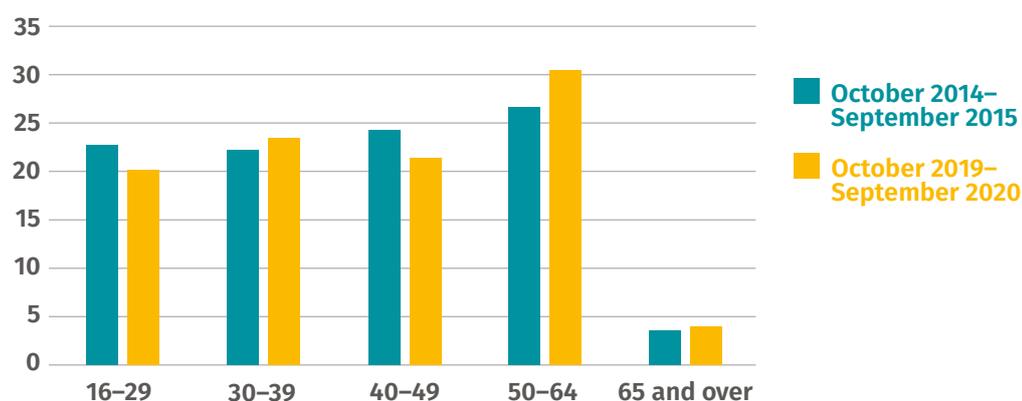
#### An ageing workforce

The construction sector workforce is ageing rapidly. The Farmer Review (2016) found that the demographic profile of the workforce could lead to a 20 to 25 per cent decline in the available labour force by 2026.

This trend appears to have worsened. Based on the most recent workforce estimates (ONS 2020a), we estimate that 750,000 construction workers will either be retired or on the verge of retirement in the next 15 years. Analysis of the Labour force survey, shows that the proportion of older workers has grown over the past five years, rising from 30.4 per cent to 34.6 per cent. Over the same time period, the proportion of workers under 30 has fallen from 22.8 per cent to 20.3 per cent. It is no surprise, therefore, that ill-health has in recent years become the most common reason for leaving the construction sector (CITB 2018a).

## FIGURE 2.2: THE CONSTRUCTION SECTOR WORKFORCE IS AGEING

Construction sector workforce by age group (%), October 2014 – September 2015 and October 2019 – September 2020



Source: Authors' analysis of the Labour Force Survey (2015, 2020)

### Migrant labour

Migrants are a major and vital component of the construction workforce. EU Workers, in particular, compose a significant proportion of high and low skilled occupations within the construction sector. This is particularly true in London and the South East (Morris 2020). Unfortunately, the skills of migrants are not always fully utilised, with many filling the “labour gaps in lower-skilled jobs” despite their higher skill level (Buckley et al 2016). Nevertheless, access to skilled migrant labour is crucial for meeting demand.

This access has been threatened by Brexit and the introduction of the points-based immigration system (Morris 2020). The new system could further exacerbate skills shortages, and leave firms with skills gaps (APPG EBE 2017; Dromey et al 2020). While in the long-term, this could be remedied by greater investment into the skills of the domestic workforce, it remains crucial that the contribution of migrants towards UK construction is recognised.

### Lack of diversity

The construction workforce suffers from a lack of diversity. The sector has historically struggled to appeal to and recruit and retain or advance minority groups. Recent analysis has found that only one in eight (12.5 per cent) workers in construction were women, while Black, Asian and other minority ethnic groups only make up 5.4 per cent of the workforce (GMB 2019). This is symptomatic of a working culture which has not fostered enough opportunities for under-represented groups.

Without action, the sector will be unable to enjoy the benefits of diversity. As well as the moral and legal imperative to ensure the industry is not guilty of

discrimination, a more diverse workforce could be beneficial for firms. An inclusive workforce better represents the client base and is essential for the sector to meet the needs of modern society (CEM 2014). A workforce which reflects the society in which it operates will help ensure it is able to understand and adapt to the demands of the country.

### DEMAND FOR CONSTRUCTION SKILLS

There is a healthy pipeline of projects in development which offer the sector a chance to not only profit, but to make substantial contributions to the quality of UK infrastructure.

The growing demand for construction will inevitably be followed by a growing demand for skilled labour. However, it is also important that the sector recognises this growth in demand as an opportunity to bolster the transition to more productive and sustainable approaches to construction.

#### Demand for construction skills is increasing

The government has committed to substantial investment in construction projects. In 2016, the National Infrastructure Delivery Plan promised up to £483 billion to enhance national infrastructure. While a proportion of this investment is already in use, there remain substantial sums set to be invested up until 2025 (IPA 2016). This investment includes the following.

**TABLE 2.1: UK GOVERNMENT INFRASTRUCTURE INVESTMENT**

Sector	Summary
<b>Infrastructure</b>	<p>Major plans have been made to enhance national infrastructure. Areas targeted for investment include:</p> <ul style="list-style-type: none"> <li>• £15 billion to support Highways England and the Strategic Road Network</li> <li>• delivering HS2 and other projects on the railways</li> <li>• expanding aviation capacity in the South East</li> <li>• Establishing a 5G network across the UK</li> <li>• £5.9 billion into science and research infrastructure</li> <li>• £2.3 billion towards capital programme for flood defence schemes.</li> </ul> <p>It is notable that most of these infrastructure projects do not directly contribute to the government’s net zero target, and in some cases would have a detrimental impact to achieving net zero.</p> <p>In the most recent spending review, the government committed to establishing a UK infrastructure bank to be headquartered in the north of England and to work with the private sector to finance major new investment projects.</p>
<b>Social and commercial</b>	<p>Planned social investments include a package of £48.6 billion in capital investment towards schools, hospitals, healthcare facilities and prisons.</p> <p>In the most recent spending review, a pot of £4 billion was made available to local communities to support ‘levelling-up’.</p> <p>In addition, there will likely be major overlap between commercial and national infrastructure projects. Expanding transport, energy and communication networks will create more commercial opportunities to improve the availability of services and utilities.</p>
<b>Housing</b>	<p>The government has promised to support large-scale projects to increase housing stock and support regeneration. These have focused so far on increasing the supply of land available for housing development. This is with the intention of meeting a target of 300,000 homes per annum, but this target has so far been missed.</p>

Source: IPPR analysis

While Covid-19 has been a cause of unprecedented economic disruption, the future demands for infrastructure investment have only been intensified. It is imperative the construction sector has access to an adequate supply of labour if it is to meet these growing demand pressures.

### **Net zero skills**

While demand for labour in the construction sector is set to increase, it is increasingly important that firms and clients contribute to more sustainable projects. Construction has recently been identified as the sector most in need of skills development, in order to ensure the sector can meet its obligation to achieve net zero carbon emissions, in line with government policy by 2050 (Robins et al 2019). The sector must focus on plugging this gap if it is to benefit from the renewed focus of environmental sustainability going forward.

Achieving better and appropriate skills development requires a more strategic approach. As the government sets out to meet its target, there will be implications for public procurement and greater consideration of the ways in which the construction sector contributes to carbon emissions (Mace 2019). Innovation is required to adapt to the new processes and technologies which will help the sector deliver on its environmental obligations.

### **Modern methods of construction**

Modern methods of construction (MMC) will potentially reduce demand for on-site labour, with research showing that should these methods be adopted more widely, there would be a surge in demand for manual and skilled labourers to work off-site. This leaves the infrastructure sector facing a dual challenge of ensuring that it has the right skills for current demand, whilst transitioning towards MMC (CITB 2019).

The speed at which funders, clients and contractors adopt MMC is gaining pace. In a recent survey, it was found that already, almost seven in 10 (69 per cent) residential property developers were delivering housing using advanced MMC and 92 per cent had plans to expand their operations in the future by taking advantage of MMC (NHBC 2018).

However, it is notable that modern methods may have limited applications in the vital renewals and maintenance sector, and in retrofit applications. This leaves many the industry with the continued challenge of sourcing labour for both new projects, and for maintaining built assets.

## **DELIVERING CONSTRUCTION SKILLS**

Changes need to be made to ensure the sector can attract new staff and make better use of its existing workforce. This requires an improved understanding of what skills are required, the capability of the further education (FE) sector to deliver, and the barriers to building a more diverse and inclusive workforce.

### **The collective action problem**

The construction sector faces a collective action problem. The Farmer Review (Farmer 2016) observed that the 'industry and its clients appear to be operating to a large degree in two distinct spheres'. The sector is lacking in stability with uncertainty in the pipeline of funded projects, low margins, and a culture of legal disputes, discouraging investment in vocational training. Leadership within the sector is heavily fragmented and investment in skills and employment therefore reflect narrow and time-bound interests, rather than any central or joined up plan.

All of this has prevented industry and government from forming a cohesive strategy when it comes to investing in and supporting skills for a green recovery. The lack of collective responsibility exacerbates barriers to implementing technical

education. The sector must work more collaboratively, and must be incentivised to invest in the long-term future of their workforce if it hopes to plug the skills gap.

### Training and education

Technical education is hugely neglected in the UK (Dromey and McNeil 2017). The UK has experienced one of the largest funding gaps between academic and technical education and over the past decade, substantial funding cuts have been made to the technical route. This has led to courses being shorter in length compared to other developed economies and resulted in fewer students taking the opportunity to enrol in courses in the fields of construction and engineering (Dominguez-Reig and Robinson 2019). The UK also performs poorly when compared to other major economies. Estimates from the OECD in 2016 suggest that £6,990 was spent per technical education student in the UK, compared to an OECD average of £8,080 (Robinson and Dominguez-Reig 2020).

In recognition of these facts, improving technical education has become a priority for this government. In recent months, the prime minister has promised to expand access to adult education by offering those without a level 3 qualification the opportunity to pursue a course without costs. The government has also committed £1.5 billion to the National Skills Fund for capital investment into further education (FE) colleges, and to greatly expand the number of apprenticeships funded through the apprentice levy.

However, even if these promises are delivered, it will still fail to restore funding to the levels before a decade of harsh austerity was implemented. Further education was the area of education hit hardest by budget cuts. To fully reverse the cuts, an additional £1.4 billion would be required, just to ensure that spending per pupil returned to pre-2010 levels. This is in spite of the government's new spending commitments for T Levels.<sup>2</sup> A similar story can be told for adult education, where learner numbers have collapsed, while funding fell by 47 per cent between 2009/10 and 2018/19. This partially reflects a greater focus on apprenticeships. However, despite spending on apprenticeships rising by 36 per cent in real terms during the same period, the government is still set to miss its 2020 target of 3 million new apprentice starts 'by a wide margin' (Britton et al 2019). With FE spending to remain far below where it would have been had real-term spending been sustained at the same level, the education system cannot deliver the level of technical education that the construction sector will need to meet its climate obligations.

There are also systemic obstacles to firms interested in training their staff. Survey data has found that more than one in three (37 per cent) employers would have provided more training if they could. Half (51 per cent) said they did not have the funds to deliver more training, while 44 per cent said their staff lack the time to undertake training. It is clear, therefore, that a lack of resources has contributed to the sector's failure to invest in the skills of its own workforce (CITB 2018b).

Despite such claims, it should be noted that there has been a collapse in employer-led skills training in the past decade. It was estimated that in 2011/12 515,000 people started an apprenticeship in England, but this had fallen to 390,000 by 2018/19 (DfE 2020). The apprenticeship levy has not been fully utilised by the sector either. Of the 218,000 apprenticeship starts the levy had supported in 2018/19, just under 9,000 (4 per cent) were in the construction sector (DfE 2019). This comes against a substantial decline in employer investment into vocational skills that has occurred across the economy, with an estimated real term cut in spending of 16.7 per cent between 2011 and 2017 (CIPD 2019).

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<sup>2</sup> T Levels are new courses, which follow GCSEs and offer students a mixture of classroom learning and job experience within relevant industries. They are the equivalent of three A levels

However, it is also the responsibility of government to provide a transparent and accessible skills system. The rigid and fragmented UK skills system can be difficult to navigate. Employers have raised concerns over the 'onerous bureaucratic processes' which can leave them having to deal with multiple agencies and bodies, navigating complex funding arrangements and struggling with uncertainty over the accreditation of courses (Skills Commission 2014). Government must ensure that the skills system supports businesses to invest in the development and training of their workforce.

### **The right image**

The greatest challenge facing the sector is its reputation. Construction needs to do better at appealing to a more diverse range of would-be entrants to the sector. Unfortunately, the construction industry has historically struggled to project an image that reflects its vital contribution to the UK. Among the public, there is 'little awareness of the fact' that the sector requires professional skills across a wide range of disciplines; from consultancy to design, and from manufacturing to supply (Ginige et al. 2007). The persistent and poorly understood nature of the construction sector must be challenged in order to throw off stereotypes and signal to potential entrants the opportunities the sector provides and requires.

### **From low unemployment to high unemployment**

In the wake of the Covid-19 pandemic, unemployment has surged.

Between July and September 2020, it is estimated that more than one in 100 employees (1.13 per cent) were made redundant across the UK (ONS 2020b). This is the highest the redundancy rate has been since the aftermath of the 2008 recession (ibid). Since the beginning of 2020, unemployment has risen to 4.5 per cent, marking the first time since 2011 that unemployment has risen continuously within a year (ONS 2020c).

It is likely that unemployment will rise further in 2021. The most recent OBR projections suggest that unemployment will rise to 7.5 per cent during the second quarter of 2021, equivalent to 2.6 million people. For the first time since 2008, the UK is set to endure a period of high and sustained unemployment.

Efforts to mitigate the looming unemployment crisis may offer the construction sector an opportunity to renew its image and support millions back into employment. The government is committing £2 billion towards a 'kickstart' scheme to support people aged 16-24 into work placements. In addition, the prime minister has promised to expand access to adult education, with adults without a level 3 qualification entitled to free and funded college courses.

Initiatives to support vocational training and attract people into work could help the construction sector address its perennial skills shortages, but only if the sector itself can demonstrate it can offer viable, secure and prosperous careers.

### **BRIDGING THE GAP**

To close the construction-skills gap we need to better understand why efforts to appeal to new workers are failing. We must explore the policy environment in which employers are operating, to understand why the pipeline of demand for construction skills remains opaque. And finally, we must understand why the sector consistently underperforms in the area of vocational training.

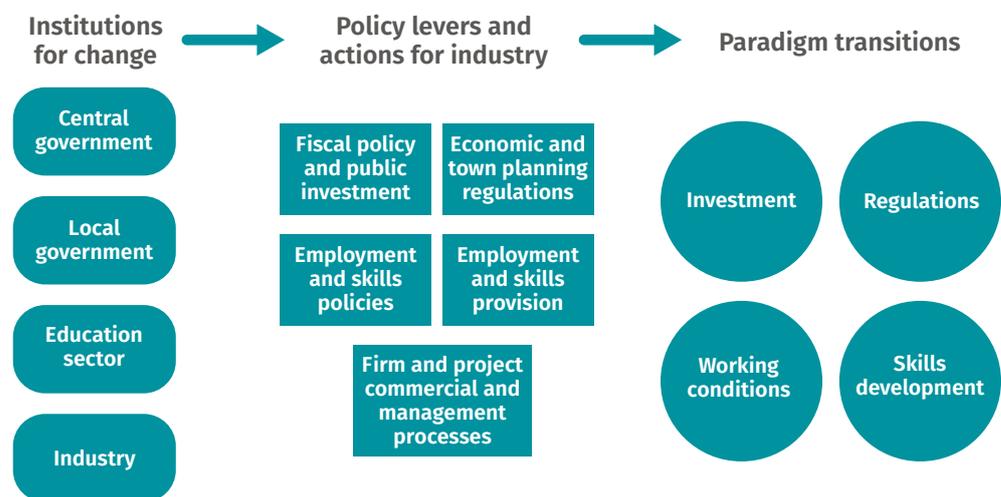
### 3. A FRAGMENTED INDUSTRY

The construction sector has faced a persistent skills gap which threatens to hinder its efforts in supporting the transition to a net zero economy. In the absence of major changes to policy and regulation alongside firm-level actions, this new demand will exacerbate the sector’s skills gaps.

We need a new strategy to improve the construction sector’s use of vocational training. This cannot be delivered by a single institution or organisation. There is no silver bullet that can deliver the change we need. Instead, there needs to be a collective effort from across the range of actors that support skills development in the UK and construction sector, making use of a wide range of available policy levers. This chapter’s aim is to contribute to understanding why the industry is failing to act collectively.

To this end, we have developed a framework that sets out the road to the desired paradigm shift (see figure 3.1). The framework establishes the institutions that will shape the skills agenda, the various policy levers available to them and the core objectives they should target, in order to bring about change. This chapter looks at each of these institutions in detail. We then look at the barriers to green skills through the lens of the Thames Tideway Tunnel project.

**FIGURE 3.1: A FRAMEWORK FOR CHANGE**



Source: IPPR analysis

#### INSTITUTIONS FOR CHANGE

##### Government

Every level of government plays a role in influencing how the construction sector invests in vocational training. Our research finds that government performs two important roles.

First, through substantial investment into national and local infrastructure projects, the government serves as a ‘major industry client’ for the construction sector (Lenard and Abbott 2001). This funding in turn drives firm-level investment in vocational training and helps the sector plan for its future skills needs.

Second, it provides strategic leadership, which can help to provide assurance and direction on when and how to invest in vocational training.

***"What are you going to do ensure you leave a legacy of improvement that you're passing on to the next project? If every past major project or major client organisation within government or outside had asked that question and acted on it, then today's construction industry would not be lagging behind in productivity and safety and training."***

Senior manager, Tideway

Despite wielding considerable influence over vocational training, government efforts in this area are highly fragmented, with a lack of coordinated effort across departments. Different cultures in different departments can contribute to a lack of coordination and cooperation. For example, the ‘institutional tensions’ between the Cabinet Office and the Treasury have presented particular challenges for aligning investment in infrastructure with national strategy (McCrae et al 2015).

## Regulators

The infrastructure sector is highly regulated.

- The economic regulators Ofwat, Ofgem and the ORR ensure value-for-money to consumers of water services, energy, and rail and road users.
- The health and safety regulator, The Health and Safety Executive (HSE), ensures the industry maintains a high standard of safety for the public and workers, both during construction and operation.

As we find in our qualitative research, the economic regulators play an important role in determining how major infrastructure project clients invest. In the water and energy sectors, major project clients must go to the regulator cap-in-hand and negotiate a budget justified through a strategic economic case. Historically, this negotiation has been based on a simplistic assessment of value-for-money to consumers, whereby ‘vectors’ of cost and benefit are assessed within a single infrastructure ‘system’ (Helm 2005).

In this system, major project clients must demonstrate that their investments deliver value-for-money to ‘customers’ of their particular infrastructure system – eg a water network, or an energy network. This approach does not account for wider benefits and disbenefits of a particular investment that occur in other ‘systems’. For example, the investments of an energy network (the energy system), which lead to intensive street works that cause travel delays (the transport system) due to congestion. Or, a major project’s investments in skills and employment which lead to vocational training opportunities for the public, boosting local economic productivity.

More recently, the economic regulators have investigated options for assessing these wider benefits and costs, and for incentivising the private sector to account for these in their business plans. This has been dubbed the ‘whole system’ approach to economic regulation, and has been formally endorsed by prime minister Boris Johnson (Gov UK 2020).

In the case of the rail industry and Highways England, most capital expenditure is driven almost exclusively by public-sector sponsors. While ORR, the transport regulator, has jurisdiction over the activities of both Network Rail and Highways England; its powers are far more limited than those of Ofgem and Ofwat. In this

sense, the activities of the transport sector are driven to a large extent by the Department for Transport (DfT) and the Treasury.

We have shown that the infrastructure asset owners are heavily influenced by the economic regulators. These regulators in-turn listen closely to their counterparts in central government: DEFRA, DfT, BEIS and the Treasury (NIC 2019). The influence that these parties hold over the business plans of the utility and transport companies is therefore of significant importance to future investment in skills and employment. In this way the departments, and their appointed regulators, can decide how much each private company invests in building the skills they need to meet net zero targets. As we propose in chapter 4 of this report, it is important for the regulators and central government to look closely at what could be done to incentivise greater investment in vocational training, and to reward businesses who implement structural changes to employment conditions for workers in the sector. Doing so would contribute to making the infrastructure sector a more attractive place for people to work, and to solving the construction industry's skills crisis.

The Health and Safety Executive (HSE) is responsible for setting statutory policies and procedures for mitigating risks to the personal safety of workers and the public. It has significant powers to enforce compliance, including 'section 20' powers to investigate places of work, and resources to prosecute for breaches of statutory regulations (HSE 2020; HM Government 2005). The HSE's powers no longer extend to the railway operators, where railway safety is regulated by the ORR. However, it does have specific powers over construction in the rail sector in some circumstances (ORR 2017). As we show in case study 2, health and safety has become a defining part of the culture of the construction industry.

***"If you did the sums based on Tideway having a health and safety record similar to other major projects, then you'd potentially have around 3,000 people going to A&E or needing serious first aid, around 200 people with occupational impacts to their life, around 150 people with serious injuries, broken arms, broken legs, loss of eyesight and stuff like that, horrible, not very nice stuff, and two fatalities. Based on industry norms that would be a 'good' outcome. The summary is that 'good' isn't good enough, you have to be transformational. That's what we set out to do on health and safety, and that's why we brought in things like EPIC and that's why we've taken an extremely proactive stance on health and safety."***

Senior manager, Tideway

This is particularly the case for the infrastructure sector, where most major infrastructure project appoints a well-resourced safety, health, and environment team, to oversee compliance with health and safety regulations.

The HSE is important for two reasons. First, health and safety regulation has offered practitioners in major infrastructure projects greater leverage to implement social-value interventions. Tideway's use of the real living wage (see case study 2) is one example of this. Encouraging a similar approach elsewhere could help the construction sector to increase its efforts to improve workers' rights. Of particular interest here is the HSE's role in terms of employment and pay. While HSE does not set formal guidance on pay and terms of employment, Tideway has used health and safety as grounds for its introduction of the real living wage. This begs the question as to why there is no formal guidance from HSE on pay and working conditions, given the clear relationship between these issues and the safety of workers and the public. Second, HSE is an important example of a regulator that has achieved a political settlement with successive governments, through which it has secured powers that appropriately reflect the

scale of challenge facing the construction sector in the area of health and safety. Moreover, it has achieved this while, for the most part, maintaining the respect and consent of industry. This should be instructive to current legislators, looking to shore up the powers of other regulators, particularly those that play a specific role in the UK's transition to net zero by 2050.

The regulators are a powerful force directing how the construction industry operates. This has ensured value-for-money to consumers and has dramatically improved the efficiency of the UK's infrastructure asset base. However, much more could be done to embed a meaningful and specific consideration of skills and employment issues in economic regulation. The HSE, with its significant statutory powers, also has the potential to be a force for good in the area of working conditions and pay.

***"The purpose of privatisation of infrastructure (utilities, telecoms, transport energy etc) in the first place was to let the private sector manage these assets as they can do things more efficiently. The government does however need to regulate them adequately. In the early years perhaps some of them were under regulated. The private sector (which one must not forget needs to make some profit or why would they be in the business at all) were able to take advantage of this and make generous returns on their investments. Tighter regulation and governance has now come into play."***

Senior manager, Tideway

Common sense would dictate that the private sector would push-back on greater regulatory oversight. However, our qualitative research found that industry leaders would welcome enhanced regulation, where it would create a more level playing field between large and small businesses in the construction sector.

### Education and training providers

Responsibility for technical education is shared by the education system and employers. In the UK, various institutions, including colleges, universities, and independent training providers play a role in the provision of technical education. Working collaboratively with a range of supporting organisations, including employer representatives, qualification regulators and awarding bodies, the FE sector is tasked with delivering relevant skills to prepare students for careers (British Council 2017). It is crucial that the sector is developing the relevant skills to support major industries in their efforts to achieve net zero.

The FE sector has changed considerably in recent decades. Colleges have long faced persistent challenges in delivering high-quality courses, expanding capacity to deliver new courses, attracting new students to specific courses, and strengthening local relationships so they are better placed to meet local skills needs (Foster 2005). Today, these challenges have been intensified by substantial funding cuts (Hochlaf and Quilter-Pinner 2020). The FE sector will need greater support to ensure that it is able to deliver the skills the economy and construction sector need.

Against the grim backdrop of austerity cuts, it is increasingly clear that the FE sector must play a more prominent role in addressing climate change. The Independent Commission on the College of the Future (2020) noted climate change as one of the major trends set to influence the FE sector over the coming years, and highlighted the imperative of 'integrating relevant skills into education frameworks'.

The UK skills system is designed to respond to demand, which under normal circumstances would mean the FE sector could focus more heavily on the provision of developing the skills necessary for the transition to net zero. However, numerous market failures have led to a mismatch between demand for skilled workers and

skills required to build a more sustainable economy (Gambin et al 2016). These persistent market failures are likely to impede the capacity of the FE sector to deliver the right skills.

*"There is a bit of a mismatch between what the government is trying to achieve and the facilities to pivot quite quickly and support those. The system is very much based on outcomes and incentives ... training providers need to stump up capital and so tend to invest in shorter, sharper programmes which are not as capital intensive to offer ... that is a challenge, being able to meet the demand for skills in those sectors"*

Policy expert, AELP

## Industry

The construction sector itself has a role to play in developing the skills of its workforce. The Construction Industry Training Board (CITB) works with the sector to promote training opportunities for a stronger workforce. Unfortunately, barriers exist which deter employers and workers from implementing initiatives that would develop the skills of the workforce. Such barriers are particularly felt by smaller companies that lack the financial resources to offer training opportunities or career progression to staff (CITB 2013). While these obstacles persist, skills gaps occur across the supply chain, hindering the potential of the sector.

The sector is also responsible for the image it presents to prospective workers. The construction sector has an 'image problem', especially with young people. This stems from negative perception of diversity and inclusion within the workforce and a lack of awareness regarding the potential career opportunities within the sector (Waters and McAlpine 2017).

The sector is facing an unprecedented challenge in attracting new entrants into the workforce. Our analysis of the Labour force survey (ONS 2020a), shows that the proportion of older workers has grown over the past five years, rising from 30.4 per cent to 34.6 per cent. Based on these figures, we estimate that 750,000 construction workers will either be retired or on the verge of retirement in the next 15 years. The sector needs to step up its efforts to appeal to a new and broader audience, or risk falling further behind.

## THE WORLD AS IT IS

### Inadequate investment in infrastructure

The UK suffers from an infrastructure investment gap. The UK has historically relied disproportionately on the private sector to finance infrastructure projects, when compared to other advanced economies (Coelho et al 2014). Lower rates of public sector investment have left the UK with comparatively smaller infrastructure stock. Poorer quality infrastructure in the UK deters private investment and is estimated to cost the UK £78 billion per year in lost output (Aubrey 2016). This creates a cyclical problem, where inadequate investment results in reduced infrastructure, which in turn discourages investment.

Recognition of this gap has prompted the government to pledge increased funding over the coming years. In 2019/20, public sector net investment was worth 2.2 per cent of GDP, but this is set to rise to 3 per cent by 2022/23. A further £224 billion worth of planned investment into infrastructure, is expected to be delivered after 2020/21 (Keep 2020). Greater public investment may potentially stimulate the private sector to support major infrastructure projects.

However, the promised investment is still far below what is needed to meet net zero obligations. The Committee on Climate Change has found that to deliver on the stated aims of decarbonisation, the UK government would need to invest

£50 billion more per annum in addition to the current pipeline of planned investments (Committee on Climate Change 2020). The scale of the challenge warrants adequate investment, and if this is not forthcoming, it is unlikely that the construction sector will have the resources it needs to deliver. This will mean the sector is less likely to support the development of skills it will be uncertain it needs.

### A fragmented industry

The construction sector is facing a collective action problem, which is preventing employers from investing in vocational skills. There is a general 'lack of integration across the supply chain' which has generated substantial costs and often led to an 'inappropriate' transfer of risk, resulting in a structural disruption that undermines the sector (Farmer 2016).

The sector also lacks a unified leadership. No single large-scale representative body represents every element of the industry. The bodies which do exist are highly fragmented and often serve one particular interest group, despite the noted benefits of a joined-up approach to delivering major construction projects (ibid). This contributes to a general lack of strategic oversight, which potentially hinders the ability of the sector to concentrate on skills development.

This collective action problem arises largely due to the structure of the construction supply chain, and the inter-firm commercial relationships that characterise it. As we show in figure 3.2, below, the sector is highly fragmented. In a project valued at £20-25 million, a single tier 1-contractor may be responsible for up to 70 tier 2 subcontractors, of which most are small or micro businesses (BIS, 2013). In a multi-billion-pound infrastructure project, it is common for multiple tier 1 contractors to form one or more joint ventures, each with hundreds of smaller subcontractors. This structure creates complexity, which in turn spreads accountability for training and recruiting the construction workforce over the long-term. It also means that at every level of the supply-chain, profits are derived, and the productivity of public investment is diluted. This highly inefficient system escalates costs, and creates a race to the bottom on pricing. This race to the bottom in turn leads firms to value-engineer their work, preventing longer-term capital investments in skills and employment.

The origins of this unique structure lie in the specialisation of construction technologies, and a trend towards aggressive risk management at the firm level. The former is a result of the increasing complexity of buildings and infrastructure, which have over-time required increasingly specialised skills to deliver (BIS 2013). The latter is largely a result of successive financial crises, which have eroded business confidence, leading to a culture in which big businesses divert risks downwards in the supply chain (Eadie et al 2013). This structure has now become a habit and a culture.

***"I think part of this is major projects, government, big infrastructure clients, having a stronger connection to their supply chain. The reality is 40 per cent of the people working on Tideway are being employed by labour subcontractors, and we only got those labour-only subcontractors in a room together to engage with them on legacy until relatively late in the programme.<sup>3</sup> So this is about the client understanding the whole supply chain"***

Senior manager, Tideway

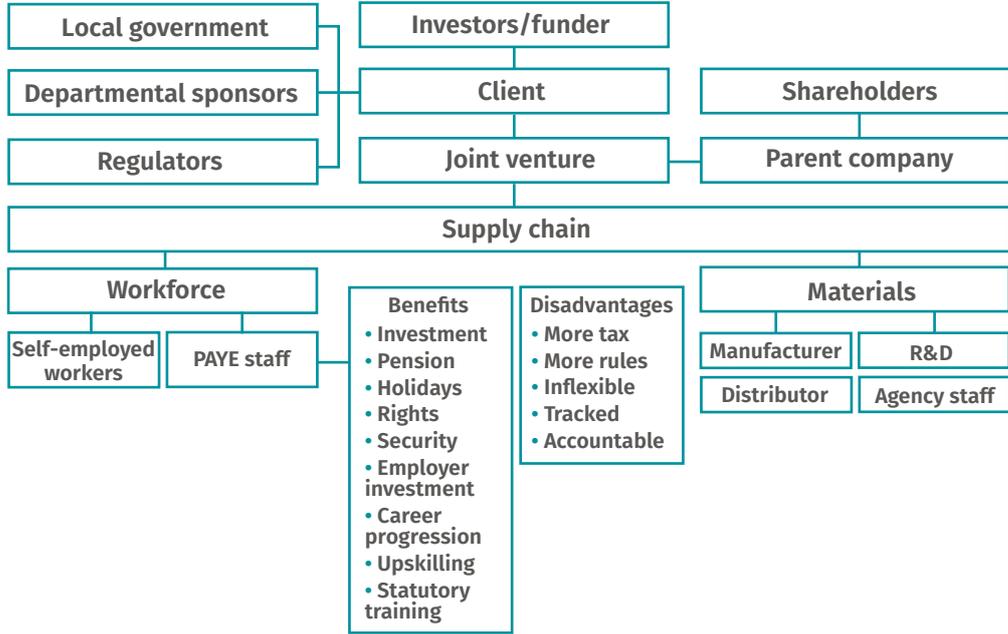
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3 Tideway's labour-only subcontractors were involved in discussions with Tideway earlier than the date stated in this quote, notably as part of their work to support the Tideway Mental Health Group.

However, in the infrastructure sector which is largely funded or underwritten by public investment, public sector procurement plays a significant hand in driving fragmentation and short-termism. Government procurement is engineered by design to drive down costs. Construction firms arrive to the negotiating table for public sector procurement too late in the day, tendering once budgets have been set. This means that construction firms are reluctant to price-in long-term investments in skills and employment programmes to their bids, and do not have agency to come forward with innovative or ambitious plans to generate returns to society through their work. This separates those with true expertise on the issue of skills and employment from the procurement process. The government has attempted to address this issue through the introduction of a 'Construction Playbook', which sets out how departments should approach the procurement of built-environment projects. However, no specific guidance has been produced on the issue of employment and skills.

The combination of the sector's unique structure and the government's approach to procurement is a collective action problem, whereby firms act in their own short-term interests, and don't collaborate to solve sector-wide challenges. This collective action problem has led to a culture of indirect employment (employment of 'labour only' workers), which has further distanced firms from the construction workforce, disincentivising investment in skills and employment.

**FIGURE 3.2: THE STRUCTURE OF THE INFRASTRUCTURE SECTOR, WITH ANALYSIS OF BENEFITS AND DISADVANTAGES OF PAYE STAFF**



Source: IPPR analysis

## Governance

Our interviews suggested that the governance of infrastructure projects has a significant impact on investment in skills and employment interventions.

***"Having a clear governance structure is vital for allowing sufficient time at the most senior level to discuss carbon, this approach is one of the key recommendations of the TCFD [climate related financial disclosures]. A while ago I recommended that the approach within Tideway should be amended to include sustainability within the Health, Safety, Security and Environment Committee, which is a sub-set of the board, as its performance and risks weren't getting discussed at that level. Once agreed, we amended the terms of reference to reflect this change going forward."***

Senior manager, Tideway

As we show in case study 1, the experience of Tideway's apprenticeship programme highlights some of the tensions around governance of skills and employment interventions, including the fundamental issue of 'who pays'.

### CASE STUDY 1: TIDEWAY'S APPRENTICESHIP PROGRAMME

At the outset of the Tideway project, a legacy commitment was set, for one apprentice to be employed for every 50 people working on the project. This target has been achieved, and in some cases surpassed, across Tideway's supply chain. The origins and motivations for this commitment, and the way in which it was executed across Tideway's supply chain, are instructive for organisations looking to deliver ambitious and efficient vocational training in future major infrastructure projects.

The Tideway apprenticeships programme highlights three key issues.

1. How project sponsors and procurement teams can set specific and achievable targets for their appointed subcontractors.
2. How innovations in vocational training can be driven through effective project governance and the efforts of committed practitioners.
3. How clients can manage their supply chain throughout the lifetime of a project, to drive outcomes.

The Tideway apprenticeship commitment responded to the outcomes of Tideway's development consent order (DCO) process, and was viewed from the outset as a means of smoothing relationships with local communities and their elected representatives in local government. This relationship is of fundamental importance, and can have a material impact on the cost of a major project.

Indeed, local employment and skills were among the key concerns of local authorities, consulted during the planning process for the project (Thames Water 2013). Investing in apprenticeships was deemed to be a cost-effective way of allaying some of the concerns of local residents and local authorities, who may otherwise have launched legal challenges against the project or created costly disruption by other means. It was for this reason that shareholders approved both allowable and non-allowable spend<sup>4</sup> on apprenticeships, and other skills and employment initiatives.

It is important to note that neither Ofwat, Thames Water, nor DEFRA took a forensic interest in Tideway's apprenticeship commitments during the production of the Thames Tideway Tunnel business case (European Commission 2015). Rather,

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<sup>4</sup> 'Allowable spend' refers to costs that can be recouped through customer bills, with permission from the economic regulator. 'Non-allowable spend' refers to costs that must be covered by investors, who experience a hit on their bottom line.

they gave their implicit consent to the allowable costs of the apprenticeship programme in response to the DCO process. This is important, as it shows that at the inception of the Tideway funding and DCO process vocational training was not being addressed at the most strategic level.

Indeed, it was not until close to the end of the DCO process that Tideway's employment and skills team was appointed. In this sense, the objectives of Tideway's apprenticeship programme were not intentionally aligned with the project's strategic potential for the entire construction industry. This has not prevented Tideway apprenticeships from having a wide and long-lasting impact. However, it is notable that the costs and benefits of employment and skills interventions - in terms of their net-present-value to society and their contribution to the efficiency of the project - were not an explicit part of the business case for the project.

There is a crucial sequencing issue here, that should be of note to future major projects. By the time at which a major project arrives at the DCO process, much of the arithmetic that underlies the business case has been 'locked in'. The absence of a cost-benefit analysis for employment and skills interventions is therefore important. In the case of Tideway, additional pressure on budget and headcount had already begun to mount at the DCO submission stage, in large part as a result of negotiations with the regulator. The issue here is that once a price for a major project has been set, and this has been translated to a monetary value in customer bills or to tax payers, a wall of political pressure is erected around this number.

***"I do think that once you have publicly stated something like £20–25 per year cost of the project to bill-payers, it becomes locked as a commitment. If you are going to make commitments on extra spending for employment and skills interventions you need to have that baked into the numbers before you go public."***

Senior manager, Tideway

***"If you don't have the cost of employment and skills and other interventions in your strategy and business case and feeding into your procurement process at the beginning and have them given a weighting in any tender evaluation process, then if you want to do more later or are required by legislation to do so it will add additional cost into your programme. You have to make a decision about who bears this additional cost. Is this something that could be passed on to the consumer or other end user? It might only be a small amount but it needs to be factored in."***

Senior manager, Tideway

***"[The weighting for procurement] is client driven. We really don't have a lot of input in terms of how its weighted. Ultimately, it's client driven."***

Labour-only subcontractor

In this context, it is difficult to make substantive changes to key aspects of the project once the DCO process has begun. For practitioners working on employment and skills within major projects, this translates to hard lines around budgets, and a degree of inflexibility in their work with appointed subcontractors. It is much easier and, in some cases, desirable, to value engineer project costs down. It is therefore worth considering involving skills and employment practitioners much earlier in business case development, and for regulators to pour equal effort into scrutinising what is proposed in the strategic economic case. This may help to ensure that sufficient capital is allocated to skills and employment initiatives, and that the scale of interventions proposed is proportionate to the scale of challenge faced by the wider construction industry and society in this area. For taxpayer

funded projects, similar changes to the Treasury's green book methodology should be considered.

It is no small feat that the Tideway skills and employment team managed to build their apprenticeship programme to encompass a much larger and more technically challenging range of interventions than was originally anticipated. One powerful example of this is the development of the tunnelling operative apprenticeship.

In Early 2019, Tideway Main Works Contractors joint ventures (JVs) recruited the first ever cohort of tunnelling operative apprentices in the industry (Greater London Authority 2020). The cohort was the result of prolonged work by JVs, and the efforts of several committed individuals. Tier 1 contractor Morgan Sindall led on development of the tunnelling operative apprenticeship standard. The close work of JVs, labour-only subcontractors, and Tideway led to an extremely successful recruitment process for the first cohort. The job advertisements attracted 293 applicants for 16 roles, with 100 per cent of vacancies filled. The retention of the apprentices has also been impressive, with 84 per cent of Tideway tunnelling apprentices retained to date.

The importance of committed individuals was consistently highlighted as a driver of success in our qualitative research. Without the work of these practitioners, and the trust placed in them by senior leaders at Tideway and Tideway's JVs, progress on skills and employment interventions would have stalled. This was partly as a result of the relative autonomy given to these individuals, by senior leaders within Tideway.

***"I think having a decent governance structure is really important ... We reported into the C-suite. Those sorts of things [including skills and employment interventions] I couldn't have done if I didn't have access to the board ..."***

Senior manager, Tideway

However, respondents were also eager to emphasise the importance of procurement in driving skills and employment outcomes.

***"We published a legacy framework in 2014, with 52 legacy commitments. We had to make sure that these commitments were in the procurement documents, so that our sub-contractors would deliver. The key here is that 'what gets measured, gets done'. The one in 50 apprentices target is only a target, it is not an absolute. But if we measure it, then at least we can have a conversation if we're not meeting it ... The idea is that you want your contractors to reply to your procurement, and say 'yes we accept all of your conditions'."***

Senior manager, Tideway

This example also highlights the benefits of integration across clients, main works contractors and the supply chain. We held a focus group with skills and employment leads from across Tideway's JVs and labour-only subcontractors. It was noted that the governance of their work was effective, when compared to other major projects. It was also noted that Tideway has resulted in many firsts for the industry, and for their businesses. This has had substantial repercussions for how these organisations will work beyond the scope of Tideway's skills and employment programme.

***"Tideway was a first because there were some commitments that had a financial penalty, if we didn't reach targets. This had never happened before. For people like me, that helped us work with directors and others in the project, because we could say 'we could be penalised if we don't hit these targets'. This was good, it made leaders in our own business take this more seriously."***

Tideway JV, skills and employment manager

The Tideway apprenticeship programme highlights the importance of effective governance and project controls for delivering on skills and employment targets in major infrastructure projects. However, it also leaves many questions about the priority given to skills and employment throughout the lifecycle of a project, and in particular as a project is conceived. It also highlights the challenge posed by the cyclical nature of investments, which can lead to short-termism in decision making.

It is clear that greater emphasis needs to be placed on the role of infrastructure projects in wider society. Responsibility for this change of focus sits with the departmental sponsors in government, and with the economic regulators. A lack of consideration of the potential macroeconomic benefits of skills and employment programmes, in particular, may mean that sponsors are missing opportunities to double down on their investments to people and communities.

### **Working conditions**

Job insecurity is rampant within the construction sector. The sector is reliant on a workforce, a substantial proportion of which, is considered self-employed. An estimated 40 per cent of the workforce was self-employed in January to March 2020 (ONS 2020a). This is considerably higher than anywhere else in Europe. While self-employment does offer a degree of flexibility, it is also associated with few employment rights, little security and lack of access to skills training and opportunities for progression (Harvey 2020). This potentially deters people from the sector and also creates disincentives for employers to invest in the development of those who work for them.

***"Someone one day has got to say, you cannot work in this industry unless you agree to employ people with the correct conditions. Why would you want to come into this industry – unless you are a foreign worker – to be treated the way a lot of the workers are. This will add to the driving down of skills."***

Business owner, small construction business

Careers in construction are generally well-paid. ONS data shows that average pay for construction workers in full time employment was £614 weekly or £31,928 annually in 2019, and £562 weekly or £29,224 as of April 2020 (ONS 2020d). This compares favourably to the real living wage, which is set at £18,135 across the UK and £20,963 in London for those in fully time employment.

There are, however, persistent and significant gaps in equality of pay in the construction sector. For example, construction employers pay their male staff 23 per cent more than female staff (Financial Times 2020).

Tideway's decision to make use of the real living wage is one example of how the industry has attempted to address historical inequalities in workers' rights within the sector. This example serves as a useful roadmap for implementing similar changes elsewhere, and highlights that the perceived risks of such changes to project-based commercial decision-making and engineering value-for-money to funders, may at times be overblown.

## CASE STUDY 2: PAYING THE REAL LIVING WAGE AT TIDEWAY

Since the initiation of the Tideway project, Tideway and its appointed main contractors and sub-contractors have paid all of their employees working on the project a real living wage. Tideway's living wage accreditation makes up one part of the project's Employer Project Induction Centre (EPIC)<sup>5</sup> initiative, and the costs for the real living wage sit under this budget line.

And we found that the investment in the London living wage, alongside the other parts of the EPIC programme, constituted a major investment for the project.

*"I can tell you Tideway's on-boarding process is a big investment. We're talking a whole floor of a central London office, a team of actors, a full day's commitment for every person working on Tideway whether they are with us for three years or three days.... All of these things were way above what other clients had done, and we had to justify that that was the right thing to do, that spending that extra money was the right thing to do ... EPICs will cost us maybe £25 million pounds....but around 30,000 people will benefit from its positive impact."*

Senior manager, Tideway

Our research found that Tideway made the decision to pay the real living wage as a result of several key project drivers.

- The project was instructed to do so, as a result of negotiations with national and local planning authorities through the DCO process and associated consultations with communities close to Tideway sites.
- The real living wage was deemed to have potential for delivering material benefits in terms of health and safety risk mitigation.
- The senior management team at Tideway decided that paying a real living wage was the 'right thing to do' as a moral obligation.
- The economic regulator Ofwat, determined that the small additional costs associated with paying the London living wage could be covered by bill payers as 'allowable project spend'.

This shows that in the absence of a significant investment at the client level, and a clearly articulated business case, these types of initiatives can fail to materialise.

This point is further reinforced by respondents, who highlight the role of the economic regulators in approving these types of investments.

This is an important reminder of the role of regulators and funders in driving skills and employment outcomes. As we discuss elsewhere, it is crucial that a mature approach to economic regulation is adopted, that articulates vectors of economic benefit across the 'whole system' in which major projects operate. Tideway provides an important precedent for such approaches, but also shows that much more work is needed to systematise this thinking across the regulated utilities and transport businesses.

It is also notable that the foundations of Tideway's case for becoming a London living wage accredited employer were centred around health and safety.

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<sup>5</sup> EPIC is a new innovation in health and safety compliance, developed by Tideway. It involves a full-day health and safety briefing, for all staff working on the project.

*"The London living wage was driven very much by a health and safety consideration. If you don't pay the living wage to somebody and they're working for 40 hours a week for you, what are they going to do? Are you happy that if they don't do anything else that they can't actually live in London? Where are they living, what standard is it, and what can they afford? Is that right? Are you happy for that person to then, when they've finished with you, to drive a taxi or do a night job of some description, or work in a bar or whatever it is, to make ends meet, and is that the right message you want to send?"*

*I've heard it said if somebody's killed, if you have a fatality, then that's a £5-10 million cost. So, if EPIC saves those two fatalities, it hasn't quite paid for itself, but it's on the way there. Now I hate to see it reduced to that context, but if somebody asked you for a business case you have to reduce it to that context."*

Senior manager, Tideway

In this way health and safety was a key rationale underpinning Tideway's business case to the regulator and shareholders, acting as a mitigation to potential future costs associated with incidents among workers and/or the public.

As we discuss elsewhere in this chapter, the use of health and safety as a rationale for living wage accreditation also highlights the important role of health and safety in the culture of the construction industry. 'Speaking in the language of' health and safety can offer practitioners the leverage they need to promote similar initiatives to senior leaders and funders, for example vocational training initiatives. It is also an effective way of cascading directives to staff, who are already well versed in the culture of health and safety.

Respondents were eager to emphasise that such initiatives have the power to reverberate beyond a project, perhaps shifting prevailing cultures around workers' rights in the industry.

*"The impact of Tideway saying we support the London living wage ... makes it more difficult for other employers not to do that."*

Senior manager, Tideway

The infrastructure sector represents a well-funded, but marginal, portion of the entire UK construction sector. Our qualitative research shows that the lens of accountability focused on infrastructure clients is fierce and public. As a result of this, employers we spoke to are at the bleeding edge of efforts to reform the industry's working conditions.

Tideway's use of the living wage illustrates why funders and the regulators should consider the role of infrastructure clients as role models for the wider construction industry. This is all the more important because elsewhere, construction workers are less secure, vocational training remains deprioritised, and employers are less publicly accountable.

### **Diversity and inclusion**

The profile of the construction workforce is overwhelmingly white and male. At the end of 2016 just 13 per cent of the workforce were women (CRL 2018). The GMB union has also found that only 5.4 per cent of the workforce comes from BAME communities. The homogeneity of the sector's workforce is indicative of a failure to broaden its appeal.

*"It may be a generational thing. The construction has until recently been very male dominated. Any industry that is so male dominated has a certain culture."*

Senior manager, Tideway

Negative perceptions of construction careers are likely fuelled by the lack of diversity and inclusion. Every group 'wants to feel valued' which means the construction sector has to do more to demonstrate the tangible opportunities and rewards relevant for those groups who are under-represented (Kier Group 2019). The sector needs to do far more to reach out to appeal to potential recruits.

In some areas, the sector has made very specific investments to improve its approach to inclusion. However, there are tensions over the costs and who will pay if such initiatives are to be scaled up across the sector.

### **CASE STUDY 3: TIDEWAY'S EMPLOYMENT OF PEOPLE WITH CONVICTIONS**

Among Tideway's 'legacy commitments' is a best-practice measure for the supply chain to recruit one person with convictions for every 100 Tideway employees. This effort was agreed as part of Tideway's commercial agreements with main works contractors, by industry as a leading example of how the construction sector can help those who face barriers to employment (ICE 2020).

The project has successfully supported 34 people with convictions into sustained employment. Tideway commissioned an independent economic appraisal of their work with ex-offenders. The research estimated a positive social return on investment of the intervention of £6.86 per £1 spent (Forever Consulting 2020).

Tideway's work with people who have convictions highlights two important issues, that are of relevance to the sector's efforts to be more diverse and inclusive. The first is about who pays, and the second is about culture at the firm level.

Tideway has deployed a variety of strategies to help those with convictions to progress in-work. This includes adopting the policies recommended by Ban the Box, a campaign which helps to remove unconscious bias in the recruitment process; and taking on employees via release on temporary license. However, the most significant challenge facing the intervention was providing pastoral support to these employees, and integrating them successfully in the workplace. Tideway had a number of employees across the project overseeing support of the people with convictions they took on. The project assigned 'skills and employment managers' for each of their JV partners, who also played a role in supporting employees with convictions.

Each JV had the flexibility to work slightly differently to achieve against the one in 100 commitment. Reflecting this, while the project was an overall success, outcomes varied across the JVs. In particular it was noted by those involved in our qualitative research that ex-offenders who were employed by smaller supply-chain businesses were supported less than those employed by larger tier 1 contractors. This was attributed to a lack of resources further down the supply chain, and to a failure to share best practice across joint venture partners. This is important, as it demonstrates that while an objective set out in the procurement of a project can drive behaviours in the supply chain, actually delivering this objective can result in mixed outcomes.

The one in a 100 commitment was part of Tideway's legacy programme to deliver sustainable benefits. In an industry that has a poor track record of inclusion in the workplace, the measures are an exception to the rule. This raises the question of how these types of interventions can be scaled, to positively impact other groups of people who are disadvantaged from the workforce.

Our qualitative research finds that the industry is grappling with who will pay for these interventions at scale. Part of the solution to this question comes down to firm-level decisions, driven in large part by voluntary decisions made by shareholders.

***"Shareholders across the world generally are taking a greater interest in ESG (environmental, social and corporate governance). They care whether they are a responsible business. Is our business safe, will we endanger people, do our materials come from ethical sources or sweatshops? They want this information to demonstrate to their stakeholders (banks, pension funds other financial institutions) that they are responsible."***

Senior manager, Tideway

However, we also find that those in industry acknowledge the role of legislation in driving this investment.

***"Procurement is generally always going to be about price and quality first. You are playing in the margins with the softer issues (including skills and employment interventions) unless there is a legal requirement or an incentive to encourage contractors. You need to consider what you want by way of social value commitments at an early stage before you start procurement and you could argue if you bake it in early it shouldn't cost any more. Having a diverse and inclusive workforce has to be good for everyone."***

Senior manager, Tideway

There is therefore a sense that the journey to a more diverse and inclusive construction workforce will require fundamental changes to the commercial drivers of diversity and inclusion. However, this example also shows that changes to the culture of the industry are of equal importance. Respondents in our qualitative research emphasise that 'top-down' investment is likely to be a small part of longer-term shifts in culture.

***"Many companies are prepared to employ people with convictions particularly once they have had some experience of it. Although there may be teething problems and some support required, people with convictions are grateful for the opportunity offered and will work hard."***

Senior manager, Tideway

This finding is supported by the appraisal conducted by Forever Consulting (2020), who show that 'hiring managers are potentially filling vacancies from other sources and not making the jobs available to skills and employment managers or labour only subcontractors who can share with people with convictions. This is a common industry stance rather than a Tideway specific issue. This can be caused by a mixture of time pressure coupled with perceptions of hiring people with convictions'. Cultural change takes time, and sustained investment.

Tideway's work with people who have convictions hints at the tensions surrounding diversity and inclusion in the construction sector. Even in the infrastructure sector, which is widely considered to be more progressive, diversity and inclusion tends to be difficult to action at the firm level. Moreover, the itinerant and fragmented nature of the industry makes it difficult to see through sustained change.

Underpinning the sector's failures to promote diversity and inclusion are some fundamental gaps in legislation, that dampen the efforts of industry. Most importantly, a lack of legislation on workers' rights means that much of the construction workforce is employed indirectly. Employers therefore hold little accountability for hiring, training and retaining their people. It is therefore for government to take bold action to reform how the construction sector employs people. It can achieve this through new legislation, and through the conditions of its own procurement and funding.

## THE RIGHT DIRECTION

In this chapter we have outlined several challenges which threaten the construction sectors ability to create the skilled workforce it needs to support a green recovery.

The challenges we face today can be overcome. To do this, we need transformative change to government policy, and how businesses invest in vocational training and employment interventions. We identify four core areas where these changes need to happen.

**TABLE 3.1: SUMMARY OF KEY AREAS FOR GOVERNMENT INTERVENTION**

Policy area	Description
<b>Investment</b>	The construction sector needs greater certainty of the major projects that will be needed as part of national effort to achieved net zero. Clarity over future funding streams will help to provide the assurances to firms needed for them to make capital investments. Greater certainty will also make it clearer what skills will be required, so that efforts can be made today to prepare the future workforce.
<b>Regulation</b>	Regulation done well can be a positive force. A strong regulatory system would play a more active role in incentivising businesses to invest in skills for a green recovery. As shown by the Tideway experience, the Health and Safety Executive may be able to regulate to improve working conditions, including pay and terms of employment. Government should also look to expand the powers of the EA, so that the support they provide for sustainable development is commensurate with the scale of the challenge posed by the climate crisis.
<b>Rights</b>	Broadening the appeal of the construction sector will rely on improving its image. A negative public perception over working conditions is likely to discourage people from seeking a career in construction. A package which delivers better rights at work, including greater job security, better earnings and more opportunities for progression are necessary to entice new people to join the sector and to ensure that the existing workforce is retained and developed appropriately.
<b>Skills</b>	The rhetoric over the importance of technical education and skills training in the UK has rarely been matched by investment and support. To deliver the skills we will need, the FE sector will need to work more collaboratively with employers and government to understand which skill areas will need to be developed. It will also need sufficient resources to expand its training offer and deliver the world-class education need to deliver net zero.

Source: IPPR analysis

To build an effective skills pipeline, we must set out to address each of the above policy ambitions, while recognising the strong relationships between them. Increasing investment means little if the relevant skills are not being developed by the education system. Providing more opportunities for training will not help if people are not attracted to careers in construction. Stronger regulation cannot effect change if funding and finance is not forthcoming.

Our current situation is in large part driven by disjointed policies of central government. Too often, departmental policies are siloed. This is symptomatic of the government's failure to offer the leadership that is necessary for a robust and resilient skills pipeline. This is why it is important that a new approach is implemented, one which brings together the different elements that contribute towards a successful skills policy and coordinates them in a way which focuses on delivering the skills that will allow the construction sector to fulfil its potential and support the UK in achieving its net zero target.

## 4.

# RECOMMENDATIONS AND NEXT STEPS

To ensure the UK's workers are sufficiently skilled for a green recovery, both government and industry must take bold action that rises to the scale of the climate crisis. In chapter 2, we outlined the institutions that must be involved in taking action, and pointed to where transformational change is required. In this final chapter we put forward a series of recommendations that can turn the rhetoric surrounding construction skills into reality.

### RECOMMENDATIONS

**Action for industry and government: Legislate to allow industry to procure responsibly, supporting a level playing field for the construction supply chain in publicly-sponsored projects.**

Our research has found that the construction sector is not currently an appealing place to work for too many existing and prospective employees. The causes of this are deep-rooted, structural, and cultural. We have made clear that addressing these issues is a vital part of securing the government's ambitions to achieve net zero by 2050. The best way for government to make a start on achieving change, is for public sector sponsors of major infrastructure projects to leverage their buying-power through the procurement process to drive behaviours at the firm level. The infrastructure sector is well placed to be at the forefront of these efforts, given that it relies to a great extent on public sector funding. We therefore recommend that the government, in partnership with industry, legislate for responsible procurement in publicly-sponsored major infrastructure projects.

The new legislation should require major projects clients to do the following.

- Appoint chief sustainability officers to senior leadership teams in major infrastructure projects, with a remit spanning skills and employment and carbon reduction
- Ensure that all new major projects are net zero by design from construction, and operation, through to decommission
- Pay the real living wage to all employees working on a project
- Appoint boards that are representative of the population in which the project is being built
- Ensure that all staff employed on major infrastructure projects are offered the opportunity to attain an accredited net zero construction qualification
- Price-in the costs to the whole supply chain of recruiting, training and retaining apprentices during and after the project.

**Produce sector-specific guidance on skills and employment interventions, to accompany the Cabinet Office Construction Playbook.**

The Cabinet Office's recently published Construction Playbook provides a powerful toolkit for departmental sponsors to deliver net zero outcomes on a project-by-project basis. The playbook also mentions skills and employment and 'social value' as desired outcomes for public sector procurement. There is, however, far too little

detail on how exactly civil servants should appraise, evaluate and negotiate skills and employment when tendering. The issue of skills is mentioned just nine times in the circa 80-page document. Separate specific guidance should be produced to deal with this issue, in close consultation with skills and employment practitioners.

**Action for government and industry: Reform the Treasury's Green Book methodology for appraisal and evaluation of new infrastructure projects, to provide specific guidance on how to account for investment in skills and employment in line with national priorities.**

To further support the transition to net zero, efforts must be made to improve the business case process for major infrastructure projects, so that measures to promote skills and employment better respond to real-world challenges. We recommend that guidance on appraising government projects found in the Treasury's Green Book is amended, in close consultation with industry via the CLC. This would allow for the assessment of new projects to consider vocational training and employment and employability interventions required to support a sustainable net zero economy.

**Action for government: The economic regulators Ofgem and Ofwat should encourage utility companies to fully cost skills and employment interventions in their business plans.**

Our qualitative research finds that the economic regulators have an important role in influencing the investments of major infrastructure projects. We also found that the regulators would be willing to give greater consideration to how costs and benefits of skills and employment interventions could be accounted for in utility company business plans. Such an approach would allow the utility companies to seek out incentives where they can directly attribute a positive impact to society to their skills and employment interventions. Expanding the 'whole systems' approach to regulation, so that costs and benefits of skills and employment interventions can be addressed in the business plans of major projects, would help these issues to be considered up-front. This is one way that industry can ensure greater collective action, and would help to ensure that skills and employment can become a 'non-negotiable' throughout the lifecycle of major infrastructure projects.

**Action for government: The government should establish a commission on bogus self-employment in the construction sector, alongside unions and industry bodies.**

The construction sector is overly reliant on self-employed workers. We recommend that parliament should establish a cross-party commission to investigate options for tackling bogus self-employment in the construction sector. The commission should work alongside unions and industry bodies, to ensure that the views of workers and businesses are represented.

**Action for government: The government, via the Department for Work and Pensions, should make explicit in health and safety regulations the relationship between pay and terms of employment, and health and safety in the construction sector.**

We find that the health and safety regulator has played an important role in reforming the culture of the construction industry, in support of workers' rights. Informally, health and safety has already been used in the Tideway project as a rationale for investment in the real living wage. However, pay and terms of employment are not currently dealt with in the regulatory powers of the Health and Safety Executive, and there is no guidance for construction employers to follow on this matter. The government should clarify HSE's involvement in

regulating pay and employment conditions in the construction sector. Giving HSE additional powers to regulate in this area, and providing guidance to employers, could help to keep workers and the public safe, and make the construction sector more attractive to job-seekers.

**Action for government: The DfE, in close consultation with the Treasury, BEIS, DfT, DEFRA and the CITB, should produce a National Infrastructure and Construction Skills Demand Pipeline.**

The government, via the Infrastructure and Project Authority (IPA), currently produces a National Infrastructure and Construction Procurement Pipeline (NIP), detailing committed public sector investment in major infrastructure. The pipeline is published annually.

The NIP was first published in 2015, and was intended to provide greater certainty to the private sector, to enable firm-level capital expenditure to boost industry-wide productivity. While a number of commentators have argued that the NIP has failed to create an overarching national strategy (Atkins et al 2017; FT 2019), the pipeline has provided a basis for firms to invest in innovations such as modern methods of construction (Build Magazine 2020).

Throughout our qualitative research, respondents highlighted a lack of coordination of demand for construction skills with supply. Firms were happy to concede that businesses share a good deal of responsibility for poorly articulating demand, and failing to invest in supply. However, representatives of businesses and the FE sector were clear that more could be done to make further education provision more adaptive to future demand for skills.

To help match future demand for construction skills with investment in training, the government's National Infrastructure and Construction Procurement Pipeline should be accompanied by a comprehensive skills demand pipeline, produced by the DfE, in close consultation with the IPA, BEIS, DfT, and DEFRA. This pipeline will, much like the NIP, would have limited utility to practitioners, as it is not currently possible to manage the large amounts of real-time information required to make this pipeline useful as a decision-making tool. However, the pipeline would help to identify the very largest of skills gaps and skills shortages and begin a conversation across the government departments involved in its production.

We suggest that it is reasonable to expect the pipeline to be renewed annually.

**Action for government and industry: Increase funding for further education and expand apprenticeship opportunities.**

Further education endured significant funding cuts over the past decade. Between 2010/11 and 2018/19, per student spending fell by 12 per cent and 23 per cent in FE colleges and school sixth forms, respectively. The recent boost of £300 million will fail to replenish lost funding during this period (Britton et al 2019).

Adult education spending has also declined in recent decades. Between 2003/04, total spending on adult education fell by over 60 per cent. This was associated with a decline in adult learners. Again, between 2004/05 and 2017/18, the number of adult learners fell from 4.4 million to 1.5 million (ibid). The substantial cuts to colleges and adult education have left the FE sector struggling to deliver the world-class technical education required to deliver the skills the nation needs.

So that the construction sector can benefit from a strong skills pipeline, we recommend the following to replace lost funding and to support expanded life-long access to vocational training.

- The Treasury should work with representatives from construction and other sectors which are set to play a leading role in the transition to net zero to establish a Green Apprenticeship Fund for small and medium-sized enterprises. The scheme would aim to offer a 50 per cent annual wage subsidy for SMEs offering apprenticeships that specifically bolster green skills. We estimate that such a fund would cost £370 million.
- Government should investigate options for further increasing capital funding to the FE sector, with the aim of promoting state-of-the-art training facilities for green skills.
- Government should commit to increasing FE and adult education revenue-funding by £6 billion per year, by the end of the Parliament.
- Government should provide a £4,000 ‘opportunity grant’ to those who have lost their job during Covid-19, who do not have a Level 3 qualification, so that they can pursue a Level 3 college course. We estimate that up to 250,000 people would potentially access this, at a cost of £1 billion (Hochlaf and Quilter-Pinner 2020).

These reforms would help address the short-term challenge of supporting people at risk of unemployment during the pandemic into training and also provide a long-term settlement that promises to overhaul the FE sector in the UK.

## NEXT STEPS

**The CLC should take forward the findings of this research, to create an operational strategy for the sector, with the endorsement of government.**

We have set out bold actions for government. To ensure that these actions are taken forward, Industry needs to show that it is committed to making equally ambitious efforts to close the green skills gap.

The Farmer Review (2016) made clear the link between the procurement process in major construction projects, and skills and employment outcomes. In our qualitative research, we find that Tideway was successful in empowering skills and employment practitioners, and in connecting commercial decision making with skills and employment objectives. However, it was also clear that opportunities are easily missed, and greater integration of labour suppliers in this process is required alongside a concerted shift towards direct employment. We therefore suggest that the CLC should take forward the findings of this research, producing an operational strategy for the sector and convening the development of training for industry leaders. This strategy must encompass:

- a plan for the construction sector’s response to the climate crisis, and the government’s net zero by 2050 target
- a comprehensive assessment of the short and long-term ‘green skills’ needs of the construction sector
- a detailed proposal for a sector skills and employment deal, developed alongside the FE sector, setting out the funding required from government to facilitate a revolution in vocational training in the sector that rises to the challenge of the green skills gap
- a standardised framework for monitoring and measuring skills and employment outcomes in major infrastructure projects and major programmes
- detailed guidance for all construction businesses on how to drive effective skills and employment outcomes through the supply chain via procurement
- a framework for corporate governance of carbon reduction and skills and employment, including guidance on key appointments (such as chief sustainability officers), and on board accountability for these issues

- a vision for what the cultures and behaviours of the construction industry should be to achieve net zero, and a roadmap for how the industry can work towards this
- a vision for what 'good work' in the construction sector should look like across occupational groups, and how the entire industry can work towards this.

In addition to an industry strategy, to drive vital cultural change it is imperative that social and environmental sustainability is understood and championed by senior leaders within construction businesses. We therefore recommend that the CLC convene the professional bodies, including RICS, ICE, IMECHE, IEMA, RIBA and CECA, to develop a cross-industry net-zero leadership academy, targeted at C-Suite leaders. This academy should be tasked with developing net zero leadership training. The academy should develop a curriculum and identify suitable institutions to deliver training to senior leaders.

Action among a small number of the very largest businesses will not be enough to change the future of the entire construction industry. Overwhelmingly it is smaller firms that employ the bulk of the construction workforce. To begin embedding cultural change among small and medium enterprises, we recommend that the CLC also develop the net-zero leadership curriculum into an apprenticeship standard, via the apprenticeship trailblazer process. To ensure that smaller businesses have access to this training, the CLC should convene an industry training fund, sponsored by Tier 1 contractors through their apprenticeship levy, with the aim of training 1,000 SME business owners via the net zero leadership academy by 2025.

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# ANNEX: METHODOLOGY

The findings of this research are based on qualitative research conducted by IPPR between October and December 2020.

IPPR conducted 14 in-depth interviews with senior leaders involved in the Tideway project and industry stakeholders. Industry stakeholders included representatives of government, representative bodies and charities. Interviews were conducted via telephone, were one hour in length, and were structured using a discussion guide.

In addition, IPPR hosted two focus groups. One focus group involved practitioners who were involved in Tideway's skills and employment programme. The second focus group involved economic regulators, government and business representatives.

The organisations involved in this research included:

- BEIS
- CITB
- Costain
- Danny Sullivan Group
- K&M Painting and Decorating
- McGinley
- Morgan Sindall
- OFWAT
- Public Practice
- The Association for Education and Learning Providers
- The Greater London Authority
- The Institute for Environmental Management and Assessment
- The Institution for Civil Engineers
- The National Infrastructure Commission
- The UK Regulators Network
- Tideway
- Tideway BMB JV
- Tideway CVB JV
- Tideway FLO JV
- Department for Work and Pensions



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